



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

COMBINED PROCEEDING
FOR U.S. Patent No. 5,486,435

In re reissue application of Haase
Serial No. 09/733,392
Filed December 7, 2000

In re Haase
Reexamination Proceeding
Control No. 90/005,710
Filed April 24, 2000

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EXAMINER: BARRY, C.

GROUP ART NO: 1724

Patent Owner's Docket
for Reissue: 27410/002RI
for Reexam: 27410/002RX

3rd Party Requester's Docket:
RE-US5846435

The Honorable Commissioner
of Patents & Trademarks
Washington, D.C. 20231

RESPONSE TO:
Office Action of August 16, 2001;

(Reissue) Notice of Defective Paper of 12/11/01; remailed
1/8/02; remailed 2/1/02;

(Reexam) Notice of Defective Paper of 12/10/01; remailed
undated; remailed 2/1/02 (not received)

Dear Sir:

In response to the Office Action of August 16, 2001, please amend the claims as follows, with changes shown by underlining for additions and brackets for deletions, and as otherwise directed:



AMENDMENTS

In the Claims:

Please **DELETE** Claim 9.

Please **ADD** The following Claim.

J₁

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21. The composition of claim 15 wherein the polyacrylamide is cationic or anionic. --

Please **Amend** the Claims as follows:

- Sub E1
D2
1. (Thrice Amended) A method for dewatering biological sludge that has been digested by a thermophilic digestion process comprising:
- adding at least one polymeric quaternary ammonium compound, as a [functionally] primary component, to the biological sludge;
 - adding at least one polyacrylamide to the biological sludge;
 - coagulating the biological sludge to form microflocs whereby said at least one polymeric quaternary ammonium compound functions as a primary component in forming microflocs; and
 - flocculating the microflocs with said at least one polyacrylamide such that the combination of the polymeric quaternary ammonium compound and of the polyacrylamide enhances dewatering of the sludge.
2. (Twice Amended) The method for dewatering biological sludge according to claim 1, wherein the polymeric quaternary ammonium compound is from the di-allyl di-

methy ammonium chloride (DADMAC) family.

3. (Twice Amended) The method for dewatering biological sludge according to claim 1, wherein the polymeric quaternary ammonium compound is from the epichlorohydrin di-methyl amine (epi-DMA) family.
4. (Amended) The method for dewatering biological sludge according to claim 1, wherein [the] said at least one polymeric quaternary ammonium compound is added directly to the sludge and, upon formation of microflocs of the sludge from [the] said at least one polymeric quaternary ammonium compound, wherein said at least one polyacrylamide is a cationic polyacrylamide and is added to form a floc that dewateres the sludge.
5. (Amended) The method for dewatering biological sludge according to claim 4, wherein the polymeric quaternary ammonium compound and the cationic polyacrylamide are in an approximately 1:1 ratio (by weight), with the cationic polyacrylamide having a higher molecular weight than the polymeric quaternary ammonium compound does.
6. (Amended) The method for dewatering biological sludge according to claim 4, wherein the ratio[s] of [the] said at least one polymeric quaternary ammonium compound with respect to [the] said at least one cationic polyacrylamide range from about 1:10 to about 20:1 (by weight).
7. (Amended) The method for dewatering biological sludge according to claim 4, wherein the polymer concentration[s] to solid[s] ratio of total polymer dosage

N₂ ✓
requirement in relationship to percentage of solids component of the sludge is between about 50 ppm:1 percent and about 300 ppm:1 percent.

Sub. E3 ✓
N₃
10. (Amended) The method for dewatering biological sludge according to claim 8, wherein the polymeric quaternary ammonium compound and the anionic polyacrylamide are in an approximate 10:1 ratio (by weight), with the anionic polyacrylamide having a higher molecular weight than the polymeric quaternary ammonium compound[does].

Sub. E5 ✓
N₄
12. (Amended) The method for dewatering biological sludge according to claim 8, wherein the ratio[s] of [the] said at least one polymeric quaternary ammonium compound to the anionic polyacrylamide range from about 1:10 to about 20:1 (by weight).

13. (Amended) The method for dewatering biological sludge according to claim 8, wherein the polymer concentration to solids ratio of total polymer dosage requirement in relationship to percentage of solids component of the sludge is between approximately 50 ppm:1 percent and approximately 300 ppm:1 percent.

Sub. E7 ✓
N₅
15. (Thrice Amended) A composition for dewatering biological sludge that has been digested by a thermophilic digestion process according to claim 1 comprising at least one polymeric quaternary ammonium compound, as a [functionally] primary component, and polyacrylamide, said components being present in the composition in a ratio to enable the at least one ammonium compound to function

Sub E. 7 cont.
JS
conts

as a primary component in forming microflocs for the biological sludge and the composition to function as an agent for dewatering biological sludge from a thermophilic digestion process.

16. (Twice Amended) The method for dewatering biological sludge according to claim 1, wherein the polyacrylamide and [the] said at least one polymeric quaternary ammonium compound[s] are used in solution or in dry form.

JS
19. (Amended) The method of claim 1[5] wherein the polyacrylamide is cationic or anionic.

SUPPORT FOR AMENDMENTS

Applicant greatly appreciates examiner's recommendations and suggested corrections to the claims. Applicant has amended the claims per the examiner's recommendations and suggestions to place the remaining claims in compliance with 35 U.S.C. § 112. Additionally, applicant has also clearly specified that the ratios claimed herein are "by weight".

REMARKS

New Counsel/Correspondence Address

J. M. (Mark) Gilbreth, has been retained to represent Owner/applicant in the above styled Combined Reexamination/Reissue. A new Power of Attorney/Change of Correspondence Address is submitted herewith. Attention is directed to the new Correspondence Address, telephone and fax numbers, and email address provided on the signature page.

Time for Response

It is respectfully noted by applicant that the "one month" time for response to the mailing of February 1, 2002, actually resulted in a 28 day period for response. 37 C.F.R. 1.550(b) provides that the "patent owner will be given at least 30 days to respond to any Office action" (which would be Sunday, March 3, making response timely on Monday, March 4).

Statement Re Interviews

The owner/applicant wishes to thank Examiner Barry for the kind courtesies extended to his attorney Mark Gilbreth during the telephonic interview of February 22, 2002.

Per 37 C.F.R. § 1.560(b), the follow statements regarding interviews of January 3,

2002, and February 22, 2002 are provided.

January 3, 2002. This interview was held between Examiner Barry and owner/applicant's former attorney Mr. Robert Bowick. Mr. Gilbreth discussed the content of that telephonic interview with Mr. Bowick on February 28, 2002. As relayed to Mr. Gilbreth, the interview was mainly procedural in nature and concerned the mailing/remailing of various papers, and the determination of a response deadline. Mr. Bowick stated to Mr. Gilbreth that Examiner Barry's summary dated 1/8/2002 is a correct and accurate summary of the interview. Accordingly, in addition to the above statements, Examiner Barry's summary is adopted as the summary of the interview.

February 22, 2002. This interview was held between Examiner Barry and owner/applicant's newly retained attorney Mark Gilbreth. Mr. Gilbreth called for clarification of the requirement for the owner's written summary of Mr. Bowick's 1/3/02 interview, and to confirm other due dates. Examiner Barry's summary faxed 2/25/02 is a correct and accurate summary of the interview. Accordingly, in addition to the above statements, Examiner Barry's summary is adopted as the summary of the interview.

Service on 3rd Party Requester

New attorney Mark Gilbreth's review of this Reexamination file revealed at least one instance in which 3rd Party Requester was not served with documents filed by the

patent owner (namely the February 5, 2001 Response to the Office action in the '5710 proceeding as complained of by Mr. Crichton in his March 27, 2001 letter).

Today, March 1, 2002, Mr. Gilbreth contacted Mr. David R. Crichton, attorney for 3rd Party Requester Ciba Speciality Chemicals Corporation, to make sure that Mr. Crichton had a copy of the February 5, 2001 Response (he says he has).

Furthermore, Mr. Gilbreth proposed to Mr. Crichton that service of documents via facsimile would fulfill the requirements of 37 C.F.R. 1.248(a)(1), that is, "delivering a copy of the paper to the person served," and Mr. Crichton graciously agreed to so accept documents. Mr. Gilbreth has extended that same courtesy to Mr. Crichton

Office Action of August 16, 2001

Specification Objections

The specification stands objected to under 37 C.F.R. 1.121(b)(1)(iii) for failing to underline textual additions to the patent and for **failing** to enclose text deleted from the patent in brackets. The Office action cites a number of examples.

Very kindly, Examiner Barry has suggested that "[a]pplicant is encouraged to file in the reissue a substitute specification comprising a soft, cut-up copy of the patent (one patent column per page) including the Abstract on a separate sheet, as has been done by the third party requester in the reexamination."

Accordingly, applicant has provided such a "cut-up copy" and now believes this objection to be overcome.

Housekeeping

Claims 19 and 20

The Office action notes that, a claim 19 was added by reissue application amendment of 12/7/00, and then another claim "19" was added by the "housekeeping" amendment of 4/18/01. Accordingly, claim 20 was renumbered under 37 C.F.R. 1.126.

Examiner Barry has kindly suggested that "claim 19 be cancelled insofar as claim 15 [upon which it depends] is directed to a composition; not a method."

Claim 5

By Examiner's Amendment, claim 5 has been amended as discussed, with no further action required by applicant.

Information Disclosure Not Considered

The Office action notes that the Information submitted on 12/5/00, i.e, the Murphy Article and the Novak article have not been considered for want of compliance with either 37 C.F.R. 1.97(c)(1) or 37 C.F.R. 1.97(c)(2), 37 C.F.R. 1.98(a)(1), and the last sentence of 37 C.F.R. 1.98(b).

It appears that the main problem with the submission was the lack of source and

the date was unspecified.

Further research of these articles have revealed that the Murphy article was published November 2000, and the Novak article was published in 2000, meaning that neither are "prior art" and thus will not be resubmitted.

Recapture Analysis

Owner/applicant Mr. Haase asserts that original claims 1-16 were intended to cover at least one polymeric quaternary ammonium compound, regardless of the presence of the plural "compound's" in claims 1, 2, 3, 15 and 16. Accordingly, original claims 4-14, in which the limitation is the singular "compound" were/are believed by Mr. Haase to have been correctly directed to the singular.

Claim Objections

Claims 2, 3, 4, 7, 10, 13 and 16 stand objected as described in the Office action. The objections have been respectfully traversed.

Specifically:

claim 2 has been amended as kindly suggested by Examiner Barry.

claim 3 has been amended as kindly suggested by Examiner Barry.

claim 16 has been amended as kindly suggested by Examiner Barry.

claim 4 has been amended as kindly suggested by Examiner Barry.

claim 7 has been amended as kindly suggested by Examiner Barry.

claim 13 has been amended as kindly suggested by Examiner Barry.

claim 10 has been amended as kindly suggested by Examiner Barry.

35 U.S.C. 112, Second Paragraph

Claims 2-16, 19 stand rejected under 35 USC 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The rejection is respectfully traversed.

In claims 2-16, applicant asserts that the dependent claims are not to be limited to not more than one.

In claim 4, Examiner Barry's kind suggestion has been adopted.

Claim 9 has been deleted.

Claims 6 and 12 have been amended by replacing "ratios" with ratio.

Claim 19, has been amended as kindly suggested by Examiner Barry.

Obviousness Type Double Patenting

Because a fee must be paid with the terminal disclaimer, and because it is not clear

what if any claims will be allowed in this proceeding, applicant agrees to submit a terminal disclaimer once claims have been indicated as allowable. Of course, should Examiner Barry require a terminal disclaimer sooner, applicant will so submit one.

Rejection Under 35 U.S.C. § 103(a) - Ort, Allied Colloid, and Kurita:

Claims 1,2, 4, 10, 12-14, 16, and 19 stand rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Ort, Allied Colloid, and Kurita. The rejection is respectfully traversed.

Regarding Ort, the Office action notes that Ort discloses a thermophilic digestion process sludge that is thickened and dewatered by an undisclosed means. However, it is very respectfully noted that rather than dewatering by an undisclosed means, Ort clearly discloses a thickening and dewatering means "including a centrifuge, vacuum filter or pressure filter." (col 5 line 5-7). In fact, Ort does not teach or suggest the chemical dewatering of sludge, but only mechanical thickening and/or dewatering techniques. Applicant's invention claims the method for dewatering of sludge by the addition of chemicals, not mechanical dewatering techniques. The Ort patent does not disclose or suggest the effect of chemicals on the sludge to effectuate dewatering.

Regarding Allied Colloid, the aqueous suspension to which Allied Colloid's method is directed is not a biological sludge resulting from a thermophilic digestion process as required by applicant's claims. Allied Colloid specifically describes a method to be applied to sedimentation processes (Page 3 line 5-6) , and fails to describe

thermophilic digestion which is a biological process during which the bacteria from the treatment system are consumed by other bacteria or by each other as per applicant's invention. In fact, Allied Colloid teaches a process to be used prior to biological digestion (Page 4 line 10-13). Further, Allied Colloid specifically describes that "the addition of cationic polymer is made at some position ahead of the clarifier or other sedimentation equipment and anionic polymeric material is added after the polymer addition but before the sedimentation stage, and preferably bridging flocculant is added after the anionic colloid but before sedimentation. (Page 7 line 30-35).

Regarding Kurita, the Office action concludes that Kurita discloses improved coagulation via a method of dewatering sludge including the combination of low molecular weight polyalkylene polyamines and a high molecular weight polyacrylamide. The Office action also states that Kurita "suggests using this approach for the treatment of 'excess sludge,' i.e., what the skilled artisan would understand to be 'wasted sludge' and 'digested sludge'"

However, applicant very respectfully submits that such "excess sludge" would refer to the traditional "mesophilic" digestion process sludge, rather than a "thermophilic" digestion process sludge.

Accordingly, there is no suggestion that Kurita's method could be used to effectuate.

The combination of Ort, Allied Colloid and Kurita does not disclose or suggest applicant's.

Rejection Under 35 U.S.C. § 103(a) - Ort, Allied Colloid, Kurita and Admitted

Prior Art

Claim 3 stands rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Ort, Allied Colloid, and Kurita, as applied to claim 1 above, further in view of "admitted prior art.". The rejection is respectfully traversed

Ort, Allied Colloid and Kurita have been discussed above.

Regarding the "admitted prior art," at column 5, lines 4-10, applicant respectfully notes that these lines are found in the "Detailed Description Of The Preferred Embodiment" section of the patent, and are two preferred amines for applicant's invention, not an admission of the prior art.

Accordingly, this rejection is traversed.

Rejection Under 35 U.S.C. § 102 Allied Colloid, McGrow, or Chung

Claims 15 and 20 stand rejected under 35 U.S.C. 102(b) as being anticipated by Allied Colloid, McGrow or Chung. The rejection is respectfully traversed.

Allied Colloid has been discussed above.

Regarding McGrow, it is directed to "coring" a problem in which large gelatinous flocs can release free water very quickly and cause blockage of fed holes, and not to a thermophillic dewatering problem.

Regarding Chung is directed to organic matter of a proteinaceous or cellulosic

nature, with the polymers being hydrophobically modified.

Thus, none of Allied Colloid, McGrow or Chung anticipate claims 15 or 20.

Indication of Allowable Subject Matter

Applicant appreciates that kind indication that claim 11 is indicated as being allowable if rewritten in independent form, amended to overcome all applicable 112 rejections, and after a terminal disclaimer is accepted.

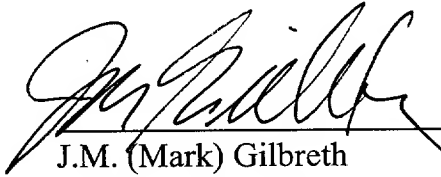
Notice of Defective Paper

- Item 1. Proof of service is provided in the Express Mailing transmittal to which this document is attached.
- Item 4. This paper is believed to now comply with 37 C.F.R. 1.530(d)-(j).
- Item 5. Other. These issues are believed to be resolved.

Request For Allowance

Prompt allowance of all claims is respectfully requested. Examiner Barry is kindly invited to contact applicant's attorney, Mark Gilbreth at 713/667-1200 to discuss any matters in this proceeding.

Respectfully submitted,



J.M. (Mark) Gilbreth
Attorney for Applicants

Date: **March 1, 2002**

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CLEAN COPY OF THE CLAIMS

1. A method for dewatering biological sludge that has been digested by a thermophilic digestion process comprising:
 - (a) adding at least one polymeric quaternary ammonium compound, as a primary component, to the biological sludge;
 - (b) adding at least one polyacrylamide to the biological sludge;
 - (c) coagulating the biological sludge to form microflocs whereby said at least one polymeric quaternary ammonium compound functions as a primary component in forming microflocs; and
 - (d) flocculating the microflocs with said at least one polyacrylamide such that the combination of the polymeric quaternary ammonium compound and of the polyacrylamide enhances dewatering of the sludge.
2. The method for dewatering biological sludge according to claim 1, wherein the polymeric quaternary ammonium compound is from the di-allyl di-methyl ammonium chloride (DADMAC) family.
3. The method for dewatering biological sludge according to claim 1, wherein the polymeric quaternary ammonium compound is from the epichlorohydrin di-methyl

amine (epi-DMA) family.

4. The method for dewatering biological sludge according to claim 1, wherein said at least one polymeric quaternary ammonium compound is added directly to the sludge and, upon formation of microflocs of the sludge from said at least one polymeric quaternary ammonium compound, wherein said at least one polyacrylamide is a cationic polyacrylamide and is added to form a floc that dewateres the sludge.
5. The method for dewatering biological sludge according to claim 4, wherein the polymeric quaternary ammonium compound and the cationic polyacrylamide are in an approximately 1:1 ratio (by weight), with the cationic polyacrylamide having a higher molecular weight than the polymeric quaternary ammonium compound does.
6. The method for dewatering biological sludge according to claim 4, wherein the ratio of said at least one polymeric quaternary ammonium compound with respect to said at least one cationic polyacrylamide range from about 1:10 to about 20:1 (by weight).
7. The method for dewatering biological sludge according to claim 4, wherein the polymer concentrations to solids ratio of total polymer dosage requirement in

relationship to percentage of solids component of the sludge is between about 50 ppm:1 percent and about 300 ppm:1 percent.

8. The method for dewatering biological sludge according to claim 1, wherein the polymeric quaternary ammonium compound is added directly to the sludge, in an amount sufficient to cause formation of a cationic overcharge within a developed microfloc system, and an anionic polyacrylamide is then added for final floc formation.
9. The method for dewatering biological sludge according to claim 1, wherein the polymeric quaternary ammonium compound is added directly to the sludge, in an amount sufficient to cause formation of a cationic overcharge within a developed microfloc system, and an anionic polyacrylamide is then added for final floc formation.
10. The method for dewatering biological sludge according to claim 8, wherein the polymeric quaternary ammonium compound and the anionic polyacrylamide are in an approximate 10:1 ratio (by weight), with the anionic polyacrylamide having a higher molecular weight than the polymeric quaternary ammonium compound.
11. The method for dewatering biological sludge according to claim 10, wherein the

anionic

polyacrylamide is about 40% anionic.

12. The method for dewatering biological sludge according to claim 8, wherein the ratio of said at least one polymeric quaternary ammonium compound to the anionic polyacrylamide range from about 1:10 to about 20:1 (by weight).
13. The method for dewatering biological sludge according to claim 8, wherein the polymer concentration to solids ratio of total polymer dosage requirement in relationship to percentage of solids component of the sludge is between approximately 50 ppm:1 percent and approximately 300 ppm:1 percent.
14. The method for dewatering biological sludge according to claim 1, wherein the biological sludge is mixed with primary sludge.
15. A composition for dewatering biological sludge that has been digested by a thermophilic digestion process according to claim 1 comprising at least one polymeric quaternary ammonium compound, as a primary component, and polyacrylamide, said components being present in the composition in a ratio to enable the at least one ammonium compound to function as a primary component in forming microflocs for the biological sludge and the composition to function as an agent for dewatering

biological sludge from a thermophilic digestion process.

16. The method for dewatering biological sludge according to claim 1, wherein the polyacrylamide and said at least one polymeric quaternary ammonium compound are used in solution or in dry form.
19. The method of claim 1 wherein the polyacrylamide is cationic or anionic.
21. The composition of claim 15 wherein the polyacrylamide is cationic or anionic.

2007-01-01

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CERTIFICATE OF MAILING BY EXPRESS MAIL

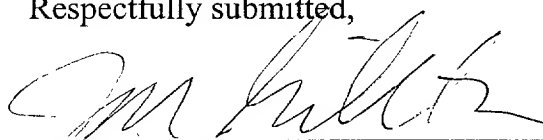
The Assistant Commissioner of Patents
Washington, DC 20231

Dear Sir:

I hereby certify that the following documents, which are attached, are being deposited (in duplicate), under 37 CFR 1.10, with the United States Postal Service "Express Mail Post Office to Addressee" service as Express Mail No. **EV 041 578 473 US** envelope addressed to: The Assistant Commissioner of Patents, Washington, DC 20231, on **March 1, 2002**.

- (1) Response;
- (2) Power of Attorney; and
- (3) Return Postcard;

Respectfully submitted,



J.M. (Mark) Gilbreth
Attorney for Applicants

Date: January 7, 2002

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CERTIFICATE OF SERVICE

A COPY OF THIS DOCUMENT AND ALL ATTACHMENTS WAS SERVED UPON MR. DAVID CRICHTON, ATTORNEY FOR 3RD PARTY REQUESTER CIBA SPECIALITY CHEMICALS CORPORATION VIA FACSIMILE AT 914/785-7102, ON MARCH 1, 2002.


J M GILBRETH